NUCLEAR DIVISION NEWS

UNION CARBIDE

A Newspaper for Employees of the Nuclear Division, Union Carbide Corporation

Vol. 2 — No. 17

Thursday, October 14, 1971

98651

IR-100 WINNER—The UV Analyzer is the second product of the Molecular Anatomy (MAN) Program to be selected in the IR-100 competition in three years. Jane Webb, former ORNL employee, is seen removing data from the device. The development is used for the clinical analysis of body fluids.

Analyzer Named Significant New Development for 1970

An automated device developed at Oak Ridge National Laboratory for the clinical analysis of body fluids has been selected as one of the 100 most significant new technical products of 1970 in a competition sponsored by Industrial Research, Inc.

The ORNL UV Analyzer is the second product of the Molecular Anatomy (MAN) Program of ORNL to be selected in the IR-100 competition in three years. The GeMSAEC Fast Analyzer, another type of automated clinical analyzer, won in 1968.

Principal developers of the UV Analyzer are: Charles D. Scott, Section Chief, Molecular Anatomy (MAN) Program; Norman G. Anderson, Director, MAN Program; W. Wilson Pitt, Jr., Group Leader, MAN Program; and Wayne F. Johnson, Instrument Engineer, Instrumentation and Controls Division.

Required Five Years

Roger F. Hibbs, president of Union Carbide Nuclear Division, accepted the award on behalf of the Corporation at a formal banquet held recently in Chicago. Most of the principal developers also attended.

Development of the UV Analyzer required five years and $400,000. The work was funded by the National Institute of General Medical Sciences through an interagency agreement with the Atomic Energy Commission. The Analyzer is the first automated system capable of routine analysis of literally hundreds of the molecular constituents in physiologic fluids and other aqueous mixtures of biological significance. Since most diseases are believed to be caused at the molecular level (more than 700 molecular constiuents are known to have pathologic significance), such analyses will be very important to the modern biomedical scientists in defining the causes of disease at the molecular constituents in human urine, of which 70 have been identified.

Seven Prototypes Built

In time, "norms" will be established and tests devised whereby physicians can accurately diagnose related patient disorders. Among other important uses, the UV Analyzer can be used as a tool for monitoring drug levels in the body and as an instrument to determine drug dosage. Commercial models of the analyzer eventually will be fast and economical enough for use in mass screening. With the sensitivity of these instruments, incipient disease or abnormalities will be detected and treated before there is a need for hospitalization.

Seven prototype systems have been built and installed in various research laboratories and clinical laboratories where they are being used routinely for biomedical research and in-depth analyses of body fluids for an aid in clinical diagnosis.

AEC Sets Californium Conference in Augusta

Because of the interest of private industry in uses of californium-252, the Atomic Energy Commission has scheduled a meeting to explore these uses November 10 in Augusta, Ga. To be considered are uses of californium-252 neutron sources in the areas of process control, nondestructive testing, nuclear materials safeguards and neutron activation analysis.

AEC's loan and sales programs will be presented.

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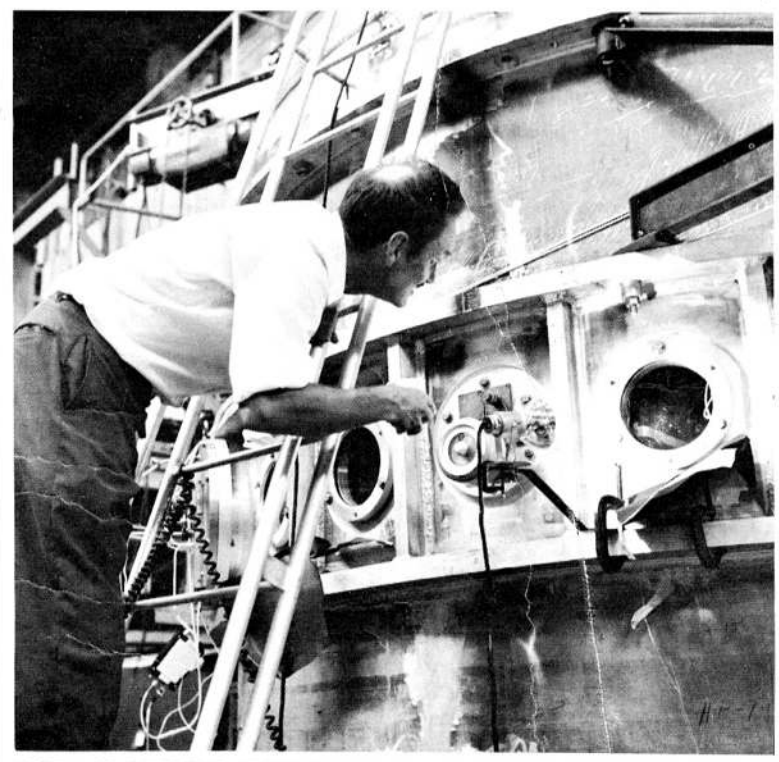


ORMAK BEGINS EXPERIMENTS—ORMAK, a new thermonuclear experimental machine, became operational recently. An Open House was held at the Thermonuclear Division of Oak Ridge National Laboratory recently. Here, David Rose, nuclear engineer from Massachusetts Institute of Technology, peers into an orifice in the apparatus. ORMAK is the Oak Ridge version of TOKAMAK, a thermonuclear experiment developed in the Soviet Union.

Larson Will Speak At Health Physics Meet October 25th

AEC Commissioner Clarence E. Larson will be guest speaker at the East Tennessee Chapter of the Health Physics Society, Monday, October 25. The dinner meeting will begin at 6:30 p.m. at the Oak Ridge Country Club.

Larson, former president of the Nuclear Division of Union Carbide Corporation, began his career with Dr. E. O. Lawrence in helping to develop the first electromagnetic process for the separation of uranium-235. He served as head of a technical staff at the Oak Ridge Y-12 Plant where he developed several new chemical processes vital to the operations. He served as director of research and then was made plant superintendent.

Larson also served as director of Oak Ridge National Laboratory. In 1955 he was named vice president in charge of research for the Carbon Products Division, and then became associate manager of research for the corporation. In 1961 he returned to Oak Ridge as vice president of the Nuclear Division, and in 1965 was named president.

President Nixon appointed Larson to the Atomic Energy Commission in 1969.

The scientist is a Fellow and member of the board of the American Nuclear Society, a Fellow of the American Institute of Chemists, and a member of the American Chemical Society, the Society for Experimental Biology and Medicine, American Association for the Advancement of Science, Phi Lambda Upsilon, and Sigma Xi.

People Helping People Give the United Way

Look around you at work today at the United Fund progress sign. Notice how the "U" is being put in the "united" effort among Nuclear Division employees. Your dollars helping those who need help.

When your solicitor calls on you, consider your prosperity and give generously.

Also consider how your money helps others. Some say "I've never gotten anything back from the United Fund" or "I don't know anyone who has ever been helped by the United Fund." But have you?

The Knox County United Fund reports that 687 Union Carbide Nuclear Division employees were served by 16 agencies last year. Many others were helped where the place of employment was not readily available. Also many family members of employees were helped through the County agencies and those supported in other counties like Daniel Arthur and agencies across the world like U.S.O. and Red Cross. Many Paducah employees still remember help they received during the "big flood" in the thirties. And even if you have never been helped by an agency, there is no assurance that you might not need them tomorrow.

When all the benefits and objections are weighed the United Fund comes out something like this—people helping people and standing united in the effort. "If you don't do it, it won't get done."

Uranium Shipments Exceed $7 Million

Approximately 167,000 pounds of enriched uranium, valued at $7,710,854, was shipped from the Oak Ridge Gaseous Diffusion Plant under the Toll Enrichment Program during September.

The enriched uranium is for use in nuclear reactors located in the states of Illinois, Michigan and South Carolina and in Sweden.

Additional requests for toll enrichment services were received during September from California and Sweden. These requests call for the future delivery of 85,000 pounds of enriched uranium valued at $3,897,550.

In addition to the Oak Ridge facility, the gaseous diffusion plants at Paducah, Ky., and Portsmouth, Ohio, also participate in the uranium enrichment program.

GENEVA PAPERS

The Fourth United Nations International Conference on the Peaceful Uses of Atomic Energy was held in Geneva, Switzerland, September 6-16.

Nuclear power generation was stressed at the conference.

Several Nuclear Division scientists delivered papers at the conference. Ten papers were delivered by staff members of Oak Ridge National Laboratory. Brief resumes of these talks appear on page two and eight of this issue of **ND News.**

Peaceful Uses of Atomic Energy Are Highlighted at Geneva

Nuclear Reactor Fuel Element Sales To Reach $1 Billion by 1990 -- Lotts

A. L. "Pete" Lotts predicted at Geneva that the manufacture of thermal reactor fuel elements for nuclear power plants should become nearly a billion dollar annual business in the United States by 1990.

Lotts

Lotts reported that the annual business in this country was some $75 million in 1970 and would grow to about $500 million in 1985 and $1 billion in 1990.

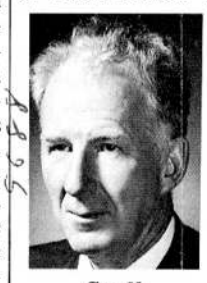
The fuel element fabrication services are predicted to grow from one million kilograms of uranium per year in 1970 to 10 million kilograms annually in the year 1990.

Fuel fabrication services are being offered in the United States for two classes of thermal reactors: the light water reactor, which includes boiling water and pressurized water reactors; and, less extensively, the high-temperature gas-cooled reactor (HTGR). The rapid expansion of the nuclear power industry in the United States has accelerated the establishment of a mature fuel fabrication business with standardized and automated processes. Although most commercial firms now offer cores fueled with uranium dioxide, the growing stockpile of plutonium produced in light water reactors will stimulate the marketing of uranium dioxide—plutonium dioxide fuel. Plutonium available for recycle will increase from a cumulative total of 2.5 metric tons in 1970 to 300 to 500 metric tons in 1990.

Research Reactor Gives Vital Data

The operation of two powerful research reactors in the United States has demonstrated that high neutron flux reactors can provide otherwise unobtainable information, Geneva audiences were told.

Arthur H. Snell, ORNL; Julius M. Hastings and Robert E. Chrien, of Brookhaven National Laboratory, reported on the operation of both the High Flux Beam Reactor at Brookhaven and the High Flux Isotope Reactor at Oak Ridge National Laboratory.



Snell

The authors explained that the reactors during five years of operation had provided a great deal of information for research in the transuranic elements, nuclear physics and particularly in solid state physics.

In the past year, they reported the HFIR has produced a record amount of 204 milligrams of californium - 252, establishing Oak Ridge as the principal supplier of this artificially-created element.

The HFIR began in its early years bombarding targets made of plutonium - 242 provided by the Savannah River Laboratory. Recently it has started using curium-224. In creating new elements and new isotopes, HFIR provides a basic research in many sciences and many laboratories. As sources of neutrons, the HFIR isotopes constitute research materials of wide usage and application.

Man Must Have Inexhaustible Energy Source, Weinberg Points to Nuclear

Increasing world population dictates that mankind in the future must have an alternative, essentially inexhaustible energy source, and based on our present knowledge the source will be nuclear, Alvin M. Weinberg predicted in Geneva.

Weinberg stated that there probably are no insuperable global effects even if nuclear energy from breeder reactor power plants within a hundred years or so reaches 60 times the total energy mankind now produces.

Weinberg

Noting that demographers predict that an ultimate world population of 15 billion persons is not unlikely, Weinberg noted that energy consumption per capita under such circumstances must be higher than at present for the same standard of living since many raw materials will have to be recycled or taken from leaner ores at that time. At the same time, the general level of wealth must be relatively high to support the intensive farming and highly urbanized society needed to feed and employ such an increased population. Thus, he explained, the world energy use may grow to 60 times the present level.

Weinberg reported that it appears extremely unlikely that large-scale effects on the climate and weather patterns of the earth would be caused from the release of high levels of waste heat from power plant operations. On a local scale, however, man's energy output already is close to the limit of the atmosphere's ability to accept waste heat, he stated.

R. Phillip Hammond, also of ORNL, was co-author of the nuclear power paper.

Breeder Reactor Fuel Plants Seen Economically Attractive by 1985

Special purpose plants for the chemical reprocessing of fuel from Liquid Metal Fast Breeder Reactor (LMFBR) power plants should become economically attractive about 1985, Don E. Ferguson told the international conference in Geneva.

Ferguson pointed out that one or more LMFBR demonstration plants are expected to be operating by 1980 with full - scale commercial plants following early in the 1980's. Based on this schedule, the estimated fuel processing loads will reach about 300 tons per year in the mid-1980's and about 3,000 tons per year in the 1990's. Before 1985, it should be possible to process the relatively small fuel load from LMFBR plants in existing chemical reprocessing plants. The plants are designed for handling fuel from current light water type nuclear power plants but could be modified for early-load LMFBR fuel. Special purpose plants for fuels are expected to follow the 1985 period.

Ferguson

He also explained that it is natural to place major emphasis on the use of the so-called Purex process for LMFBR fuels since nearly every major nuclear fuel processing facility now uses it. However, the differences in current fuel and the future LMFBR fuel require extensive research and development to make the process economical for LMFBR fuel, primarily because of the problems concerned with higher plutonium content and the heat output from the LMFBR fuel.

Price Cut Is Seen For Nuclear Fuels

Electric utility companies can look forward to a significant "real price" decrease in fuel cycle processing costs for nuclear power plants over the next 30 years, Royes Salmon reported at Geneva. Many of the fuel cycle processes, he pointed out, such as fabrication and chemical reprocessing of nuclear fuels, show a marked decrease in unit cost of output as the plant size is increased.

Salmon

Salmon also noted, however, that the "real price" does not take into account possible inflation, which might partially or totally offset the expected reductions.

Salmon stated that the nuclear fuel industry is expected to ex-

(Continued on Page 8)

Radioactive Effect on Environmental Studies Urged by ORNL Ecologists

Auerbach

Kaye

Ecologists from ORNL urged the world nuclear community to continue development of techniques for predicting what ultimately happens to radioactive materials released to the environment.

Stephen V. Kaye, radioecologist, pointed out at Geneva that the emphasis of his profession in the past decade has been on collecting data on the environmental behavior of small amounts of radioactive materials. The future thrust, he said, must be on finding ways to use the data to help ensure continued public health and safety as the role of nuclear electric power expands. Senior co-author of the paper with Kaye was Stanley Auerbach.

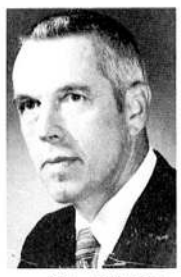
The report stated no detectable biological effects on wild plants and animals in 15 years of intensive study, when subjected to radiation in amounts permitted by law to the general public.

Joining Kaye and Auerbach in the paper's preparation were ecologists David J. Nelson, David E. Reichle and Paul B. Dunaway and systems analyst Ray S. Booth, all of ORNL.

Different Studies With Inconsistent Results, Dr. Storer

Scientific evidence from different studies on the long term effects of radiation on man are somewhat inconsistent with each other as well as with some, but not all, expectations based on animal experimentation, Dr. John B. Storer told audiences at Geneva.

Dr. Storer emphasized that the reasons for these apparent inconsistencies need to be explored carefully. He stated the evidence is somewhat conflicting in studies of the Japanese survivors of the nuclear bombings, patients who were irradiated for ankylosing spondylitis in Great Britain and Northern Ireland, and radiologists and their technicians. Since animals have shown a loss of longevity in all studies where high radiation doses have been used, Dr. Storer said it is not clear why the data conflict on the effects of radiation on man's longevity.



Dr. Storer

He also pointed out that retrospective studies on the relation between prenatal exposure to low X-ray dose and childhood tumors have usually suggested a positive association; however, evidence from these studies is not compatible with observations obtained on the Japanese. Also, prospective studies performed on prenatally exposed children have been negative.

Dr. Storer also noted that the conservation approach adopted by groups which recommend radiation protection standards has led them to use assumptions which are sometimes inconsistent with scientific evidence.

Genetic Damage to Mice May Be Less Than Once Thought Russell Indicates

Results of research with mice indicate that the risk of much of the genetic damage to man from small doses and low dose rates of X- and gamma radiation may be considerably less than was estimated when radiation standards were set several years ago, William L. Russell reported to the international audience at Geneva.

Russell

Russell stated that his work showing reduced mutation frequency with radiation dose rate is strong evidence for the existence of a repair system which operates at low dose rates on mutational or premutational damage, but which is saturated or damaged at high dose rates.

Research on literally millions of mice during his 23 years as principal geneticist at ORNL, Russell measured radiation damage by the specific-locus method. Comparing the lower genetic damage per unit dose at low dose rates with that of high dose rates, he stated: "In the male, the reduction is to 30 percent. In the female, the risk is reduced to near zero."

Russell's report concentrated on one important aspect of the problem of estimating genetic hazards: radiation-induced mutation rates at specific gene loci in the mouse and the physical and biological factors that affect them. Findings which he enumerated as having a direct and important bearing on the estimation of genetic hazards are the effects of low dose rates and small doses, the effect of the interval between irradiation and fertilization and other effects such as sex and cell stage.

Time Change

Daylight Savings Time will end at 2 a.m., Sunday, October 31. Carbiders will all set their clocks back one hour October 30 before retiring.

Shift workers will report to work as usual on the midnight shift on DST and clock out Sunday on Eastern Standard Time and Central Standard Time (for Paducah employees).

NUCLEAR DIVISION NEWS

UNION CARBIDE

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NUCLEAR DIVISION

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INTERNATIONAL ASSOCIATION OF BUSINESS COMMUNICATORS

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Y-12 Technical Papers Will Be Given At National Conferences in October


Mrs. Johnson


Mihalczo


Powell


Clausing


Stewart


Holcombe

Research work performed at the Oak Ridge Y-12 Plant will be reported by Union Carbide personnel at three national meetings this month.

Joseph H. Stewart will report on "Thorium, Uranium and Uranium Alloys: Detection, Identification and Particle Size Estimation on Air Filter Using the Electron Microprobe," at the 15th Conference on Analytical Chemistry in Nuclear Technology today in Oak Ridge.

John T. Milhalczo and Elizabeth Johnson will present papers to the winter meeting of the American Nuclear Society in Miami, Fla., October 17-21. The Mihalczo paper is entitled "A Highly Enriched Uranium Metal Sphere Assembly." Mrs. Johnson's paper is "The Nuclear Criticality of Intersecting Cylinders of Five Percent Enriched Uranyl Fluoride Aqueous Solution."

Robert E. Clausing, George L. Powell and Cressie E. Holcombe have authored a report called "Low Energy Electron Diffraction, Auger Electron Spectroscopy and Electron Induced Desportion Studies of Lithium Hydride." This paper will be presented at the American Society of Metals 53rd Metals Show and Materials Engineering Congress in Detroit, Mich., October 18-21.

Oak Ridge Rites Held For Larry E. Shepherd

Larry E. Shepherd, Dispatching Department, died September 29 in Oak Ridge. He had been working in Y-12 since July, 1970. He served briefly in the Army and had graduated from the Neighborhood Job Corps in Indiana.

Survivors include his mother, Mrs. Katie Shepherd, 236 S. Benedict Ave., Oak Ridge; sisters, Linda, Mrs. Bernice Kelly and Mrs. Mary Freeman, all of Oak Ridge; brothers, Leon, Atlanta; Emitt, Hartford,Conn.; Rufus, Oak Ridge, and Dennis Shepherd, with the U. S. Army in Hawaii.


L. Shepherd

Services were held at Weatherford Mortuary with the Rev. Dozier McKinnon officiating. Burial followed in the Oak Ridge Memorial Park.

Few Motorists Observe 'Lights-On' Enactment

Russ Ralston, SS Warehousing and Shipping, has come up with a worthwhile safety suggestion.

Russ writes: "Very few motorists are turning lights on while driving in the rain as prescribed by Tennessee state law. This is very noticeable in the Y-12 area as well as outside in the parking areas. The wisdom and safety value are readily seen in the law, but there seems to be widespread ignorance concerning the existence of such a law."

Laws are for the protection of all of us. The "lights on when it's raining" one is a prime example of this.

Kentucky drivers must turn lights on at sunset!

W. E. Cagle, Rolling Mill, Rites Held in Knoxville

William E. Cagle, Jr., Y-12's 9215 Rolling Mill, died September 28, in a Knoxville hospital. He had been in Y-12 since 1950, hiring in originally in 1944 and working until 1946 in his first plant stint. A veteran of the U.S. Army, Mr. Cagle worked with Western Union and C. B. Atkins Company in Knoxville before entering service. Between his Y-12 employment, he worked with the Diamond Match Company, Barberton, Ohio.


W. E. Cagle

He was a native of Athens, Tenn.

Survivors include his wife Mrs. Peggy Corum Cable, and son Daniel, 2730 Carson Ave., Knoxville; and sister, Mrs. Clifford Smith, Maryville.

Services were held at Stevens Chapel with the Revs. J. M. Adkins and Luther Witt officiating. Burial followed in Highland Memorial Cemetery.

Ride wanted from West Knoxville, Rocky Hills area, to West Portal, straight day. Ted Burger, plant phone 3-7326, home phone Knoxville 584-6984.

Ride wanted from Karns community to North or East Portal, straight day. Mark Jernigan, plant phone 3-5735, home phone Knoxville 584-6740.

Riders wanted from Deane Hill, Rocky Hill, Kingston Pike area, via Lovell Road, to any portal, straight day. Jim Delaney, plant phone 3-5774, home phone Knoxville 588-1508.

Car pool member wanted from Norwood area, Knoxville, to any portal, straight day. John Hawley, plant phone 3-5959, home phone Knoxville 688-4879.

Ride wanted from Halls Cross Roads area to any portal, E Shift. Ronald Stout, plant phone 3-7546, home phone Halls 688-0520.

Oak Ridge Y-12 Plant

Y-12 Plant Editor ..... James A. Young
extension 3-7100

Three at Y-12 Plant Retire November 1


Dick


Lawson

Three Y-12ers retire at the end of October . . . Mrs. Allie A. Baer, Chemical Services; Huber F. Dick, Dimensional Inspection; and Glenn J. Lawson, Civil and Architectural Engineering, will join the retired ranks November 1.

Allie A. Baer, nee Scott, was born in Patridge, Ky., but came here after her marriage to Clyde M. Baer.


Mrs. Baer

She came to work in Y-12 August 7, 1944, and lives at 142 Tyson Road, Oak Ridge. Her husband is deceased, and her two sons Clyde, Jr., and Jack are deceased also. She has two daughters Juanita Collins, Naples, Fla.; and Lillian Miller, Knoxville, and six grandchildren.

Mrs. Baer has no definite retirement plans but does plan to keep her Oak Ridge home.

Hubert F. Dick

Hubert F. Dick was born in Altoona, Pa., and worked with Westinghouse Electric Co., East Pittsburgh, Pa., in the early thirties. He went with Vought-Sikorsky, Stratford, Conn., in 1935 and with Republic Aviation, Farmingdale, L. I., in 1939. He worked with AVCO, Nashville, Tenn., until coming with Union Carbide May 11, 1951.

Mrs. Dick is the former Juanita Sanders. They live at 108 Nevada Circle, and have a son Grady Dick, living in Atlanta; and a daughter Martha Worrell, whose husband R. G. is a lieutenant in the U.S. Navy. They live in Jacksonville, Fla., but expect to transfer to the West Coast in the Spring. The Dicks also have four grandchildren.

The retiring Y-12er says he will hunt and fish and plans a trip to California in the early spring.

Glenn J. Lawson

Glenn J. Lawson, a native of Chattanooga, lives at 212 Alder Lane, Oak Ridge.

Lawson came to Y-12 in September of 1957, after a long career in drafting and architectural work with the Tennessee Valley Authority, Barber & McMurray, Knoxville, and other architectural firms in Chattanooga, Atlanta, and Bristol. He is a veteran of the U.S. Air Force.

The Lawson have three sons, Charles and John in Oak Ridge, and Glen, a senior at Georgia Tech. Mrs. Lawson is the former Dorothy Morris.

Lawson has no retirement plans, but does hope for a three or four months' rest.

25-Year Watches Shown In Retirement Counciling

The Retirement Counseling office has a display of Union Carbide 25-year watches. Included in the display are seven women's watches and 10 men's, as well as pictures of the two clocks that may be chosen by 25-year veterans.

Those upcoming "old-timers" have been notified to stop by and select their choice. The display is located in room 144 in Building 9704-2.

SAFETY SCOREBOARD

The Y-12 Plant Has Operated
24 Days Or
874,000 Man-Hours
(Unofficial Estimate)
Through October 10
Without A Disabling Injury
SAFETY AT HOME, AT WORK, AT PLAY

UNITED FUND WORKERS—Solicitors, representing both salaried employees and members of the Atomic Trades and Labor Council meet for a kick-off of the 1971 fund drive in Y-12. In the photograph to the left, in the front row, from left, are Joe B. Gallman, Ward E. Wampler, Norman A. O'Neal, co-chairman; Jo Ann Isham, John V. Welch and Ray E. Hester. In the second row (which starts in the center of the photo) are Ralph Lovin, Howard S. McClellan, Floyd E. Clevenger and Otha L. Williams. In the back row are Charles R. Lively, co-chairman; James K. Robinson, William P. Mattingly, Austin Reed, Raymond E. Mellon, W. Steve Porter, Soloman T. Burress, Donald D. Neikirk, Robert D. Scalf, Doyal E. Watson and James E. Batch. In photo number two, from left in the front row, are Keith Kahl, co-chairman; Rufus C. Hill, Roy A. Godsey, Jr., William A. Moles, Errol G. Scogin, George R. Beasley, John M. Sinclair and B. W. Hensley, co-chairman. In the second row are B. B. Coulter, James H. Rowan, Jimmy F. Gilliam, Roy C. Johnston, James R. Nickell, treasurer; James D. Griffin, Conie F. Jenkins, Floyd D. Bradburn and Donald G. Hill. In the back row are K. O. Pearson, A. K. Johnson, Charles E. Robinson, Rembert Harris, Glenn I. Davis, Millard N. Wilkerson, Talmadge C. Wilson, Dewey E. Floyd and George F. McPhearson. Solicitors throughout the plant are emphasizing the "People Helping People" theme of the United Way of giving.

Paducah Gaseous Diffusion Plant

Paducah Editor ..... Keith Bryant
extension 369

CARPOOL CHARLIE

Tom McKenzie has a good chance of being placed on the St. Louis Cardinals' payroll. He attended four games on a recent weekend over in the Gateway City, and the Cards won all four. This is considered great in St. Louie because if the Cards win one game, folks consider that a winning streak!

* * *

People will believe almost anything, particularly if a tiny bit of larceny is mixed with it. However, back in 1871 there apparently was a limit to how much they would swallow. A Boston newspaper reported that a man named Coppersmith was wanted for extortion, having sold some gullible people on the idea that the human voice could be transmitted over metallic wires by an instrument he called a "telephone." It is apparent that the culprit was never apprehended, and did not receive the prompt and fitting punishment that he deserved and his infernal machine finally hit the market under another name. Wonder what this world would have been like had Coppersmith got "busted"?

* * *

We hear the worst thing about retirement is having to drink coffee on your own time.

* * *

The difference between gossip and news depends on whether you are hearing it or telling it.

Making Grandfather Clocks Mastered by E. W. Kincer

"It started out as an idea from **Popular Mechanics,** a couple of rough sketches and some mahogany boards," was the way E. W. Kincer, Process Maintenance, described how he got into the grandfather clock business.

Kincer, a former resident of Lenoir City, Tenn., now lives on U.S. Highway 45 near Hickory, Ky., with his wife Betty, son, Dan, and daughters, Rhonda and Marla. Betty is an elementary school teacher, Dan is a junior at Mayfield High, and Rhonda attends J. U. Kevil. Marla, only one-and-a-half, is still at home.

Kincer's masterpiece is a 77-inch high, 18-inch wide clock of polished, gleaming hardwood. Its German-made works run by the two weights in the middle. It has Westminster chimes that sound on the quarter hour, and strike out the hour. Included is a dial which indicates the phases of the moon.

He is justifiably proud of his work and got the idea from a couple of rough sketches, ordered the works from a shop in Illinois, and did all the installation and cabinet work himself. He admits the hardest part of all was the hand carving at the top of the clock.

Kincer joins the long list of Paducah Plant employees whose unexpected expertise sets him apart from the ordinary.

PRACTICES ANCIENT ART—E. W. Kincer, Process Maintenance, is proud of this handsome grandfather clock. The hardest part of all, Kincer admits, is the hand carved business at the top of the clock.

AMERICAN FAMILY—Karl Westrin, a young citizen of Sweden, is seen with his "U. S. family." From left are Glenn Dexter, principal of Lone Oak High School, young Westrin, Al S. Bacon, daughter Marcia, and Betty Bacon; son Ronnie and Debra Bacon, the "baby" of the family. The Bacon family has welcomed Karl into their home as a "Youth for Understanding" visitor.

Swedish Student Attends Lone Oak High

By Keith Bryant

Most people associate a young visitor from another country living in an American home as an exchange student whose purpose is to attend school in this country, while his counterpart attends school in another country.

"Not so," says Al S. Bacon, Plant Engineering Division. "Nothing could be further from the truth. The primary purpose of the program is to provide a family living experience, to promote world peace and international good will for both the host family and the visiting student."

And that's the way Bacon sees his relationship with young Karl Westrin, a citizen of Sweden, who is living in the Bacon home as a "Youth for Understanding" visitor.

Karl is a 17-year-old native of Stockholm where he has completed nine years of elementary school and one year of "gymnasium" which is equivalent to our high school. His father is an administrator at the University of Stockholm and his mother a Red Cross nurse turned housekeeper. Karl has two brothers, Johan, 20, and a younger brother, Svante, 12. The family lives in an apartment in Stockholm but have a cottage outside the city.

Young Westrin plans to continue his education through a degree in natural science at the University of Stockholm. While in this country, he is studying advanced biology, sociology, American history, math and English.

"I appreciate the friendly relations between teachers, pupils and other students," says Karl, "and I like the hot climate here and the big cars. I think Paducah is a nice place to live and have had only pleasant experiences with the United States and its people."

Al, Betty and the children have absorbed Karl into their family life, each having his own interests and sharing family responsibilities and problems. Karl is an interesting, intelligent and agreeable young man, and a credit to his natural family, as well as his adopted family and country, says Bacon.

Who knows, Karl may someday be associated with our Carbide plant in Sweden. It is certain that the **Nuclear Division News** will gain some foreign distribution, as Karl has already asked for several copies of this edition to send home!

EXHIBIT FOR CRAFTS

An art and handicraft exhibit of the Paducah Plant employees and/or members of their families has been suggested for later on in the year. Those interested should contact Kenneth Davis, at PAX 668, or Ben Whiteaker, PAX 634.

APPLICATION FOR TICKETS

Requests **MUST** Be In By November 19

CARBIDE CHILDREN'S CHRISTMAS PARTY

(For Children Ages 2 to 9)

SATURDAY, DECEMBER 11, 9:30 A.M.

ARCADE THEATRE, PADUCAH, KY.

Employee's Name _____ **Badge No.** _____

Home Address _____

(Please Print Street Address or RFD. City and Zip Code)

Number of your children who will attend the party (please list):

(BOYS)		(GIRLS)	
NAME	Date of Birth	NAME	Date of Birth
NAME	Date of Birth	NAME	Date of Birth
NAME	Date of Birth	NAME	Date of Birth

List names, ages and sex of children very accurately. The information will be used to bring present records up to date.

NOTE: Fill out form completely and return as soon as possible, but not later than November 19, to the Recreation Office, Union Carbide Corporation, P. O. Box 1410, Paducah, Ky. 42001. Tickets will be mailed to parents at their home addresses.

Viola Elliott, U. H. Rucker, Ben Shinn, Donald Williams Retiring on Oct. 29th

Four long-time Oak Ridge Gaseous Diffusion Plant employees retire this month, combining more than 117 years of service with Union Carbide! Mrs. Viola V. Elliott, Plant Library; Ules H. Rucker, Finance and Materials; and Ben F. Shinn, Safety, Health Physics and Industrial Hygiene Department, retire October 29; and Donald E. Williams, Lubrication Department, has elected an early retirement.

71-1511 71-1547

Mrs. Elliott

Rucker

71-1505

Shinn

Williams

Viola Elliott was born in Elizabethton, Tenn. She attended school there and also went to East Tennessee Normal School and East Tennessee State College. Before coming with ORGDP on July 9, 1945, she worked with North American Rayon Corp., Carter County School System, and American Bemberg Corp., all in Elizabethton; and the Universal Products in Bristol, Tenn.

Mrs. Elliott lives at 213 Manhattan Ave., Oak Ridge. She has a daughter Carol E. Reynolds, at Chicksands Air Force Base, England; and a son, Vernon G. Elliott, Oak Ridge.

Her retirement plans include some travel and taking care of her Oak Ridge home.

Ules H. Rucker, Stores Department of Finance and Materials Division, is a native of Washburn, Tenn. He came to ORGDP June 13, 1944.

The Ruckers live at 2837 Greenway Drive, Knoxville. They have a son Earl S. Rucker, Buffalo, N. Y.

Rucker hopes to rest up for a while, do some fishing and hunting, and hopes to spend some time in Virginia, Florida, and other places visiting old friends he hasn't seen in a long time.

Ben F. Shinn, a native of Cherryvale, Kan., is another old-timer, coming with ORGDP April 15, 1946. He worked in the grocery business in Loveland, Col., and for the Remington Arms Co., Denver, before coming here. He was also with the Dupont Co., in Hanford, Wash., prior to his ORGDP employment.

Shinn and his wife Norma live at 6908 Stockton Dr., Knoxville. They plan to remain in East Tennessee, making some modifications to their home and enjoying photography and woodworking.

Donald E. Williams hired in with Union Carbide at South Charleston, W. Va., October 12, 1932. He transferred to ORGDP in February 1944.

A native of Putnam County, W. Va., Williams lives at Route 18, Shady Oak Lane, Knoxville. His wife is the former Jewell Purdue. They have two daughters, Nell Mellinger, Memphis; and Donna Cooper, Charleston, W. Va.; and two sons, Ed, San Diego, Calif.; and Joe, Bowling Green, Ky.

The 39-year veteran plans to move to Ocala, Fla., where his main interests will center around his vegetable garden and his prize roses, azalias and bulb rock garden. In his spare time he hopes to fish some and enjoy the Florida sunshine.

20 Years' Service

James H. Fuller
George L. Marshall
Watson R. Kerry
James W. Myers
Albert H. Williams
Ruby L. Jones
James L. Hengstler
Richard H. Stevens

Quotes From Notes From Our Retirees

From some place out in the wide, wild west, I want to take this means to thank every one who contributed to my retirement gift consisting of beautiful and functional pieces of luggage. I'm sure putting it to good use.

Good luck, y'all.

Harold Mayberry

New Ashtabula Plant For Liquid Hydrogen

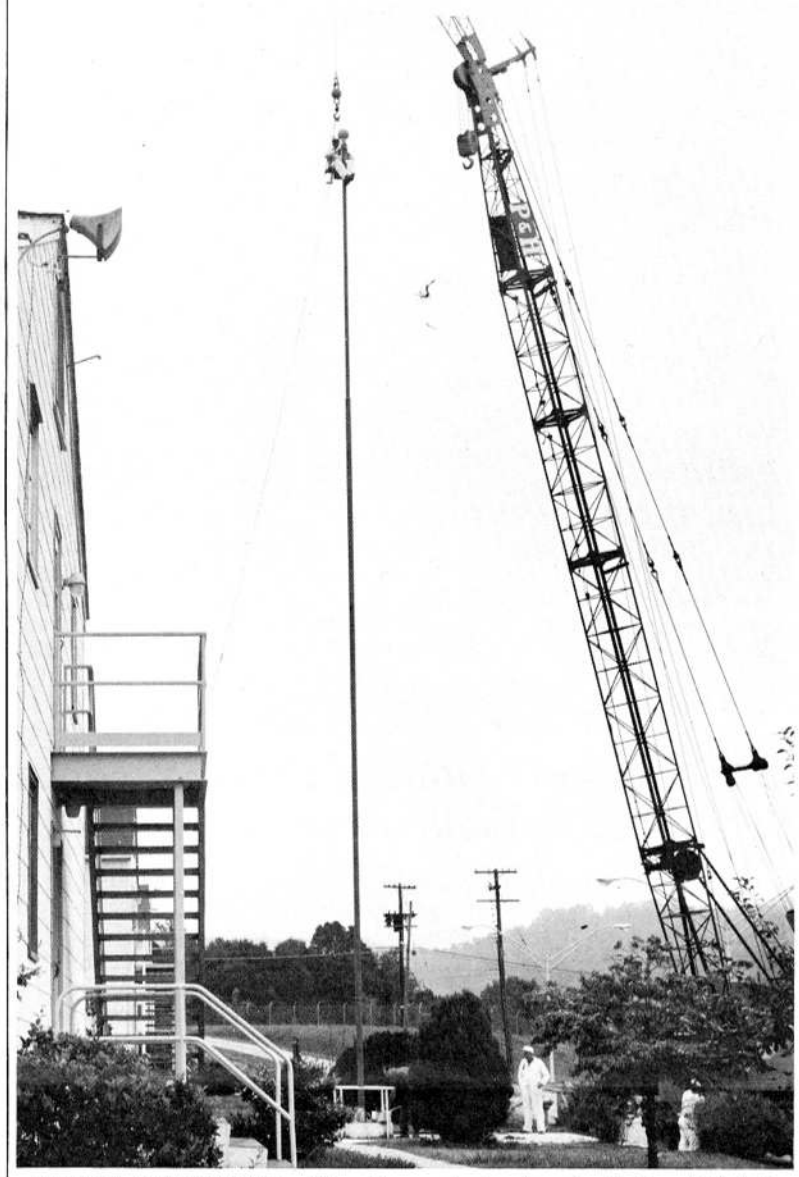
Plans for the construction of a multimillion-dollar liquid hydrogen plant in Ashtabula, Ohio, the first of its kind in the northeastern quarter of the United States, has been announced by Union Carbide Corporation. The plant is expected to be in operation by the third quarter of 1972. With an initial investment of $3 million, it will have an ultimate capacity of 17 tons per day, increasing Union Carbide's liquid hydrogen capability to almost 50 tons per day.

Liquid hydrogen is used widely in the aerospace program. It is a rocket propellant for the manned space Apollo program and will be used for the proposed space shuttle. It is also in great demand by such industries as electronics, for the production of crystal chips and computers; glass, for the float glass process; food, for fat hydrogenation; drugs, for penicillin and vitamin production; metal-working, for annealing; and metal reduction.

Oak Ridge Gaseous Diffusion Plant

ORGDP Editor ..... Doug Carter
extension 3-3017

71-1250



HELLO UP THERE!—The flagpole in front of the Administration Building at ORGDP recently received a fresh coat of paint. L. K. Johnson is the painter in the bosun's chair at the very top of the pole.

ORGDP's G. Jones Named AIC Fellow

C. Gordon Jones, a chemist in the Materials Development Department of the Oak Ridge Gaseous Diffusion Plant, was recently elected a Fellow of the American Institute of Chemists. The AIC has more than 8,500 members in 33 chapters throughout the United States. It is the only chemically-oriented organization whose principal purpose is to develop the professional and economic status of chemists and chemical engineers. Membership is limited to those whose principal education is in these fields.

Jones has been at ORGDP since 1956, following his graduation from Berea College, Berea, Ky. He was awarded an M.S. degree from UT in 1966. He is a native of Gallatin, Tenn.

Mrs. Jones is the former Jean Granstaff, an ex-Y-12 employee. They live at 147 Nebraska Avenue, Oak Ridge, with their two children Beverely and Kenneth.

Jones' interests include swimming, pistol shooting, and of late, golf.

C. Gordon Jones
AIC Fellow

Ride wanted, or will join car pool from Fountain City area, to Portal 4, 7:45 to 4:15 shift. C. P. O'Brien, plant phone 3-3031, home phone Knoxville 687-3674.

SAFETY SCOREBOARD

ORGDP
Has Operated
2,148,000 Safe Hours
Through October 7
Since last disabling injury on May 4

NEWLY CERTIFIED ENGINEERS—Eleven ORGDP engineers recently received certification from the State of Tennessee, as Professional Engineers at a TSPE banquet at the Oak Ridge Country Club. Seen above, from left, are Charles T. McLoughlin, Otis J. Baker, David J. Johnson, Ernest C. Evans, Harlan F. Dunlap, Robert G. Jordan, ORGDP Superintendent, who presented the certificates, Woody S. Byars, William K. Simon, Bernard Neimann and Albert T. Skinner. Not present for the honors were Richard W. Wavrik and Ralph I. Deadrick.

Oak Ridge National Laboratory

ORNL Editor ..... Martha Goolsby
extension 3-6421

ORNL ENGINEERS CERTIFIED—Six Laboratory engineers were recently certified as Professional Engineers at a TSPE banquet, held at the Oak Ridge Country Club. Four of them are seen above, from left, Dale A. Dyslin, Donald B. Trauger, associate director of reactor engineering at ORNL, who presented the certificates; Luther L. Leavell, G. Terry Yahr and Robert W. Derby. Charlie B. Haynie and Harry A. Nelms were not present at the ceremony.

Waste Heat Utilization Conference Scheduled in Gatlinburg October 27-29

A National Conference on Waste Heat Utilization will be held this month at Gatlinburg, Tennessee, for the purpose of considering how the thermal energy discharged as a by-product of steam power plants can be utilized productively.

Sponsored by the Electric Power Council on the Environment, with the assistance of ORNL, the conference hopes to bring together experts and interested parties to discuss potential use for this heat, and the technical, economic and legal problems anticipated in the implementation of such use.

The Electric Power Council on the Environment is a coalition of all segments of the electric utility industry concerned with environmental questions. Its members represent investor-owned utility companies, public power systems and rural electric cooperatives.

The conference will feature speakers knowledgeable in agriculture, aquaculture, marketing of foodstuffs, legal restraints, eastern and western U.S. water right, urban planning and economics. One of the sessions will be devoted to description and discussion of several demonstration programs of waste heat utilization. One of the social hours will feature foods cultured in thermal effluents. Every session will close with a full-participation panel discussion among speakers and attendees.

Scheduled for October 27-29, the conference will take place at the River Terrace Motel in Gatlinburg. Rod J. McMullin, general chairman of the Salt River Project, Phoenix, Ariz., is chairman of the conference. Registration information is available from Marvin M. Yarosh, ORNL, Building 9104-2, P.O. Box Y, Oak Ridge, Tenn. 37830, telephone (615) 483-8611, ext. 3-7841.

Frances Loving Retires

Frances Loving, Metals and Ceramics Division, retired October 1. She had been at ORNL since 1951 and at the time of her retirement was secretary to the Fundamental Research Group of Metals and Ceramics Division.

Frances Loving

She plans to continue her interest in the community and plans to visit with her family. Son John and his wife and four children live in Winter Park, Fla., where he is chief engineer at WKIS in Orlando and daughter Mary Frances is a surgical nurse at the University of Colorado.

When not traveling, Mrs. Loving will be at home at 111 Meadow Road in Oak Ridge.

RIDE from Orchard Lane in Oak Ridge to East Portal, either shift. Pauline Barnhill, 3-1481 or 483-4536.

CAR POOL MEMBER from vicinity of Waddell, West Outer or Pennsylvania to East or North Portal, 8:15 a.m. Tom Burnett, 3-6939 or 483-1975.

RIDE OR JOIN car pool from South Knoxville or U-T to North Portal, 8 a.m. Barbara Graunke, 3-7765 or 573-3913.

RIDE from Kingfisher Lane (Oak Ridge) to East Portal, 8:15 a.m. Teresa Parson, 3-6951, 483-4261.

RIDE from Chapman Highway area to East Portal, 8:15 a.m. Bobbie Rudd, 3-1481 or 577-2018.

JOIN CAR POOL from Oak Hills (Oak Ridge) to East Portal, 3:15 a.m. C. Y. Wong, 3-1822 or 483-7870.

RIDERS from Walker Springs or Cedar Bluff area to West or North Portal, 8:15 a.m. Jackie Sims, 3-1961 or 588-7569.

Californium - 252 Needles Donated

Needles containing small quantities of the isotope californium-252 are being given by the Atomic Energy Commission to the International Atomic Energy Agency for distribution to foreign universities in member states of the IAEA.

The californium needles, fabricated at the Savannah River Plant in South Carolina from californium recovered and purified at the Transuranium Processing Plant (TRU) at ORNL, now are on loan to foreign medical institutions where their effectiveness in therapy of certain types of cancer is being studied. After the needles have decayed to a level of radioactivity no longer useful in medical applications, they will still be valuable to universities for studies such as reactor experiments, dosimetry studies, instrument calibration, production of other short lived isotopes, and some neutron activation analysis.

The isotope, an intense emitter of neutrons, is also being studied for applications such as pollution control, mineral exploration, process control, neutron radiography and cancer therapy.

About fifty percent of californium available in the United States is produced from target rods irradiated in the High Flux Isotope Reactor at ORNL. To date, all californium has been recovered and purified at the TRU Facility.

Based on the experience of U.S. hospitals now using californium, the first medical sources should be available to IAEA in about 18 months. AEC and IAEA representatives will meet soon to work out details of the transfer of these sources.

Company Service 20-25-30

ORNL employees reaching 25 and 20 years of company service during October are:

25 YEARS

George R. Patterson, Nat T. Bray, John R. Tallackson, Joseph H. Paehler Jr., Roy C. Lovelace, Henry E. Teasley, Herbert R. Gwinn, Horace J. Wallace, Jack P. Cagle, Mary S. Lones, Vernon E. Stokes, Rose M. Cox, Geneva H. LeBow, Thomas D. Owings Jr., George W. Eckerd, Richard P. Metcalf, Harry K. Walker, Alvin S. Ludlow, Vernon T. Houchin.

20 YEARS

Raymond M. Burnett, Eugene E. Ketchen, Robert B. Parker, Philip S. Rudolph, Wilbur D. Shults II, Marvin T. Morgan, William M. Ewing, James M. Farmer, Eugene F. Oakberg, James G. McNabb, William R. Martin Jr., Edgar G. Miller, Teddie E. Welch, Ben L. Houser, O. William Hermann, Sue Alley, Aaron C. Rutenberg, Edgar L. Compere, Thomas R. Raines, Jo M. Dailey, Paul W. Pair, Ed H. Kobisk, Andy L. Johnson, James C. Smith, Bennie McNabb Jr., Charles W. Greene, Brena K. Stevens.

LOST AND FOUND

Found: Man's sun glasses and Chrysler product switch key.

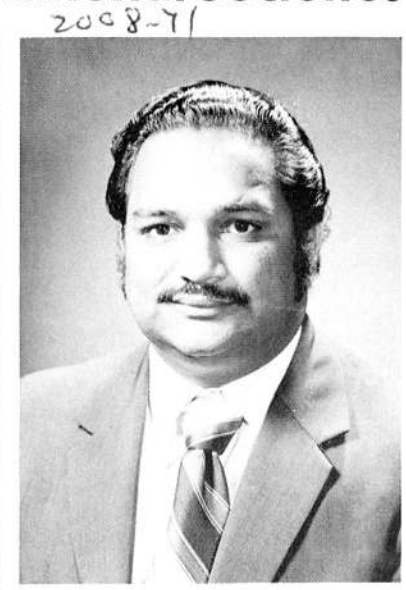
Lost: Man's Timex watch with calendar, Twistaflex band.

For information concerning lost and found items, contact Guard Headquarters, 3-6646.

Cunningham, Uppuluri Named Fellows in Two National Societies

2021-71 2008-71

John E. Cunningham



V. R. Rao Uppuluri

John E. Cunningham, Associate Director of Metals and Ceramics Division, has been elected a Fellow of the American Society for Metals. The honor will be conferred upon him at the ASM's Annual Meeting October 20 in Detroit.

Cunningham has been Assistant and Associate Director of Metals and Ceramics Division since 1955 and a member of the ORNL staff since 1946. Before assuming his administrative responsibilities, he was in charge of the Division's Fabrication Laboratory where he played a major role in the design, development and manufacture of fuel elements for many reactors.

He received the B.S. degree in Metallurgical Engineering from the University of Illinois and the M.S. degree in Metallurgical Engineering from The University of Tennessee. His fields of specialization include the technology of materials employed in the construction of nuclear research in power reactors, design, manufacture, and performance testing of critical components, such as nuclear fuel, control rods, reflector, moderator, primary piping, heat exchanger, steam generator and pressure vessels.

The author of numerous publications and two patents, he is also a member of the American Nuclear Society, American Society for Testing and Materials, Sigma Xi and the Metallurgical Society of the American Institute of Mining, Metallurgical and Petroleum Engineers. In 1965 he received an ANS Certificate of Merit for meritorious contributions to the technology of reactor materials.

V. R. Rao Uppuluri, Mathematics Division, has been elected a Fellow in the American Statistical Association. The presentation was made in the Association's recent Annual Meeting. His citation read: "For his significant contributions to Markov Processes and Information Theory, and for the application of his broad research capabilities to biological and physical problems."

Since joining ORNL in 1963 Uppuluri has been a member of the Statistics Group. He received the M.A. from Andhra University in India and the Ph.D. degree from Indiana University. He is a Fellow of the American Association for the Advancement of Science and a Fellow of the Royal Statistical Society (England).

The objects of the American Statistical Association are to foster, in the broadest manner, statistics and its applications, to promote unity and effectiveness of effort among all concerned with statistical problems, and to increase the contribution of statistics to human welfare.

Patents Received

ORNL employees have recently received these patents:

Charles F. Coleman and **Boyd S. Weaver** for a "Selective Stripping of Plutonium from Organic Extracts."

F. Neil Case for a "High Energy Radiation Treatment of Tall Oil."

William R. Miller and **Charles A. Mossman** for a "Time-Proportioning Process Interface for Direct Computer Control."

6-15046

IT'S FOOTBALL TIME AGAIN! These husky young sons of ORNL employees have been moving the pigskin at Oak Ridge High School. Front row (l-r) are Steve McNeill, Steve Ruckart, Mark Denning, Mike Coffey and Robert Caudill. Standing (l-r) are Clinton Ball, Bill Nichols, Tom Diggs, Lyndon Hurt, Paul Stokes, Allen Kelly and Douglas Stewart.

Kidney Stone Formation

By T. A. LINCOLN, M.D.

Although kidney stones are not common, they create a commotion all out of proportion to their usual seriousness. During an attack, the patient writhes in agony. After he recovers, he is sometimes dismayed by the lack of specific advice he can get to prevent a recurrence.

Each year about one or two adults per 1,000 population will have a kidney stone attack requiring hospital treatment. The incidence is higher in the Southeast, especially in Georgia and South Carolina, and appears to be increasing in frequency.

Dr. Lincoln

Stone Formation

There are many conditions which favor stone formation. They include chronic kidney infections; immobilization in bed, such as occurs following a severe stroke; an overactive parathyroid or thyroid gland; an inherited defect in calcium metabolism or excretion; a malignancy which has spread to bone; gout, and a few relatively rare metabolic disturbances. This list may seem impressive, but it accounts for only about 20 per cent of the stone formers. Eighty percent will have one, two, or occasionally a few more episodes during their lifetimes but will never have any evidence of systemic or urinary disease to account for them.

Stones occur more often in men, at least in those admitted to hospitals, but autopsy studies have revealed about an equal sex incidence in undiagnosed stones. They occur chiefly in middle age, being unusual in old age. Although many stones cause severe pain when they get stuck in the ureter, the tube which connects the kidney and the bladder, many remain relatively "silent" in the kidney.

The stones which remain in the kidney may get fairly large. If they are passed when they are still small, they frequently cause no pain. It is when the stone is bigger than about three to four mm in diameter or has sharp protruding edges that it cannot get through. There are five narrow places in the ureter which patients would probably consider their "hard" places where their "rocks" get caught!

Stone Disease Varied

Stone disease varies markedly in frequency in different countries and at different times. In Southeast Asia, particularly in Thailand, bladder stones in boys two-three years of age are common. Bladder stones in children used to be common in Europe and America, but have virtually disappeared in the past 100 years.

It is clear that diet is an important factor in stone formation. In rural Southeast Asia, babies are still fed premasticated, glutinous rice during the first month of life and consequently drink less milk. As a result of these two dietary differences, they excrete less phosphate and sulfate but more than average calcium. In other parts of the world on a better diet, childhood bladder stones have been replaced by adult kidney stones. Bladder stones are usually urates while kidney stones are most frequently mixtures of various calcium oxalates and phosphates.

A high dietary intake of calcium does not automatically cause stones. As a matter of fact, it doesn't even increase the urinary excretion of calcium. The human gut has the amazing capacity of absorbing only as much calcium as the body needs. A person may increase his calcium intake 100 percent over the normal balance of about 1000 mgm/24 hrs and not increase his urinary excretion significantly.

Even with a greatly increased urinary excretion, stones don't necessarily form. Urinary calcium excretion rates in most kidney stone patients with no obvious disease are normal. High calcium excretion is a factor in a few stone formers, but the reason is usually not diet.

Nondialyzable Solids

The presence of an increased amount of nondialyzable solids, that is, organic material which will not pass through an ultrafilter, apparently favors stone formation. These solids increase during the spring and summer when the incidence of stones also increases. They may act like silver iodide seeds used in rain making. They form a nidus on which the mineral salts in solution can precipitate. Precipitation occurs more readily when the urine is highly concentrated, actually supersaturated, as it more often is during the summer.

Crystallographers have shown that once these microscopic "seeds" get coated with one of the mineral salts in the urine, a process known as epitaxy causes crystals to form. It is an oriented overgrowth of crystalline material upon the surface of another crystal of different chemical composition but similar structure. Why it occurs in some and not in others is still poorly understood. It may be due to some subtle chemical change in the urine caused by diet, dehydration, lack of exercise, or even genetic predisposition.

The chemical composition of stones should be determined whenever possible. Sometimes special diets and medications inhibit stone formation.

The only general advice to a "healthy" stone former is to always drink plenty of liquids and get adequate exercise. In a study in Czechoslovakia, the incidence of stones was 20 times greater in those who sat in their jobs versus those who led active lives — another justification for regular exercise!

Riding Club Sponsors Horse Show Saturday

The East Tennessee Riding Club will hold its 24th annual fall horse show Saturday, October 16. Cosponsored by the Horse Show Association, the show will open at 11 a.m. on the riding club grounds located on Tuskeegee Avenue, Oak Ridge.

There will be 29 classes and an award will also be made for high point speed event horse. This show is an East Tennessee Western Horseman Association approved. show. Chairman will be Bill Ebert; judge for the show will be Dr. C. C. Chamberlain, Knoxville; ringmaster Ray Carden; and the announcer will be Charlie Jackson.

All Carbide

Men's physical fitness classes begin October 19 at Oak Ridge High School. They will meet each Tuesday from 7-9 p.m. The class offers organized calisthenics, running, rope skipping, and informal volleyball and basketball play. Tennis shoes are all that is required. For more information contact the Recreation Office, 3-6723.

* * *

Announcements will soon be posted concerning the starting dates of league play in basketball, volleyball, badminton, table tennis.

Programs are available for interested persons in skeet, trap, high-power rifle, smallbore rifle and pistol shooting and in archery. The schedules are available and would-be skeet and trap shooters need not have a gun in order to try the sports. Smallbore competition is now in progress.

* * *

CARBIDE CANOE CLUB

If you wish to purchase a canoe through the Carbide Canoe Club, contact Jim Ford, extension 3-6461. October 29 is deadline for ordering.

* * *

FISHING—Y-12

E, F, G, H and J Shiftmen are planning an all-day Smallmouth Bass Rodeo, Saturday, October 16, at Sequoyah Boat Dock. All Carbide employees in Y-12 are invited, as well as wives, husbands and children. No entry fees. A total of 10 prizes . . . for smallmouth bass only.

LISA AND GINGER—Lisa Sproles on her pony Ginger will perform at the 24th annual horse show set for October 16 in Oak Ridge. Sponsored by the East Tennessee Riding Club and the Horse Show Association, the show is chaired by Bill Ebert and Jack Jolly. Ringmaster will be Ray Carden and Charlie Jackson will emcee the event. Lisa is the daughter of Bruce Sproles, Dimensional Inspection, Y-12.

SPORTS NOTES

ORNL—Fishing

The third quarter fishing rodeo ended August 31. Following are the winners in each of the categories: Largemouth bass, James R. Hensley; smallmouth bass, William J. Martin; bream, G. E. Pierce; crappie, J. L. Matherne; hybrid and rock fish, W. T. Bostic; rough fish, Ada Bostic; sauger, F. S. Adams; stripe, R. G. Shooster; trout, J. H. Gilliam; walleye, Paul J. Jones.

* * *

ORNL—Bowling

All scores reported were the latest at press time.

In the ORNL Ladies League the Mousechasers and the Strikettes were nose and nose for first. Honors went to Kathleen Hopper, Bowling Aces, with a high scratch game of 211 and high series of 526 to Georgia Guinn, Mousechasers.

In "A" League the Punops and Half Frames were up front with 10-2 records and 14 points. Lee Tucker of Good Guys turned in a 671 high handicap series, Jim McNabb of Pee Wees a 255 high handicap game and Dave Hadlestad of Tailenders and Elbert Carlton of ORAU tied at 212 for high scratch game.

In "C" League the Damagers were out front. Honors went to P. R. Kuehn of I and C with a 689 high handicap series, E. F. Roy of Alley Rads with a 258 high handicap game and D. L. Laughlin of Remkeys with a 233 high scratch game.

In "E" League the Guttersnipes led the Woodchoppers, Gutterfinks, Limits, Do Dads and Mets. Larry Gipson of the Gutterfinks rolled a mighty fine 602 scratch series on October 5.

* * *

Y-12—Bowling

The Rounders have been making it tough on the other teams in "C" League. Honors went to Hummel of the Badgers with a 243 high scratch game, Huber of the Badgers with a 255 handicap game series, Baxter of Sunflowers with a 641 high scratch series and Gladson of Fireballs with a 701 high handicap series.

Eightballs is the team to catch in the Classic League. Honors went to Craven of the Bumpers with a 267 in high scratch game, Craven of the Bumpers with a 295 high handicap game, Ladd of the Eightballs with a 686 high scratch series and McLendon of Has Beens with a 728 high handicap series.

* * *

ORGDP—Bowling

In the Women's League the Up-Towners are out front. Eva Elmore was selected bowler of the week for her scratch scores of 202-132-134 for a 468 and handicap scores of 251-181-183 for a 615. Other honors went to Marilyn Canterbury with a 495 scratch series.

In the Men's Tuesday Night League the All Stars are number one. Honors go to D. Ducay for high scratch game of 230 and C. L. Butcher for a 245 high game with handicap, a 590 high scratch series and a 647 high series with handicap.

* * *

All Carbide—Bowling

In the Carbide Family Mixed League the Pinsetters led. High scratch game went to Del Ducay (236) of Tears and Beers and Edith Duckworth (193) of Oops.

20,000 Pine Trees Set In AEC-Controlled Area

Twenty thousand pine seedlings were planted in the Oak Ridge area by the Atomic Energy Commission during fiscal year 1971.

Scattered over some 20 acres of AEC-controlled land, the seedlings were of the loblolly variety and were provided to the AEC by the Hiwassee Land Company, Kingston, Tenn. They were planted as part of a continuing forest management program administered by the Ecological Sciences Division of Oak Ridge National Laboratory.

The aims of the program are to assure a sustained yield of high quality timber and to provide a means of long-term ecological research. The land on which the seedlings were planted is part of some 21,000 acres which were placed under the forest management program in 1964.

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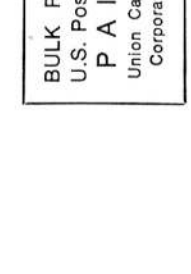
Molten Salt Reactor Reliability Seen in Future Power Generation

The operating experience of an advanced reactor experiment offers assurance that molten salt reactor systems can be used dependably for power generation, Murray W. Rosenthal told Geneva audiences.

Rosenthal reported that the Molten Salt Reactor experiment began operations at ORNL in 1965 and performed very reliably until shutdown in December 1969. After completion of a six-month demonstration run in 1968, the original uranium-235 fuel was replaced with uranium - 233, making the MSRE the first reactor to operate on this man-made fuel. Uranium-233 is produced by irradiation of thorium, and would be used in thermal breeder reactors.



Rosenthal

Covering recent developments which indicate that molten salt reactors could serve as efficient and low - cost breeder systems, Rosenthal pointed up the significance of a process which uses liquid bismuth to extract fission products rapidly and continuously from the molten fuel.

Rosenthal concluded that although the thermal breeder is the objective of molten salt reactor development efforts, converter reactor systems could be scaled up from the MSRE to produce low-cost power.

Charlie Brown, Dracula Will Open Theatre Season

The Oak Ridge Playhouse and the Junior Playhouse are in the midst of conducting membership drives for the 1971-72 season. The Playhouse will open November 5 with a delightful musical, "You're a Good Man, Charlie Brown," and the Junior Playhouse will initiate their season with "Dracula," an adaptation of the original script, in early December.

Information on memberships or individual tickets for any presentations may be obtained from Don Steiner, Mrs. Phillip Edmonds, J. T. Huffstetler, or Mrs. Paul Ebert. Arrangements for group rates should be made through Mrs. Paul Ebert. Arrangements for group rates should be made through Mrs. Ebert. Memberships in either organization represent a substantial savings on ticket costs over box office prices.

New Phase in Training Open to Limited Number

A new phase of industrial training will begin soon in the TAT program as an add-on to the present GED study program. This phase will provide continuing opportunities for employees who have completed the GED program, or who have a high school diploma, and wish to improve their potential.

Employees should contact their supervision for details on the program. Low code employees are particularly encouraged to participate in the plan. A total of 20 employees will be accepted in the training. The Learning Lab schedule is set for two hour sessions twice a week, with one hour of the session during working time.

Copies of the Upgrading Program and applications may be obtained from supervisors. The Learning Lab, open to the small group of UCC employees, will prepare students for the college-level courses available at TAT during non-work hours, reimbursable through the company's Educational Assistance Program. There will be specific shop courses, such as machining, mechanical operations, electronics, welding, drafting and physical testing. Academic disciplines will be in basic math skills.

Additional information on the program may be obtained from Dave Harrigan, Building 9709, or extension 3-5493.

SQUARE DANCING

Square dancing for novices began last Friday, October 8, at the Elm Grove Gymnasium. Dancing is from 8 to 10 p.m. and will continue October 15 and 22. Y-12er Bob Baker is the teacher. Additional information may be obtained from Chuck Borello, Oak Ridge telephone 483-1553.

Radioactive Wastes' Safe Disposal Important to Nuclear Power Growth

The safe disposal of radioactive wastes is "one of the most important and controlling problems in the large-scale use of nuclear energy," Floyd L. Culler told the Geneva audience.

In reviewing the current waste management program in the United States, Culler said the proposed demonstration repository for solid wastes in the state of Kansas may be large enough to safely accommodate all the high - level radioactive wastes which will be produced during the rest of this century.

Culler

Culler pointed out that there are few choices for the long-term disposal or management of radiobedded salt in central Kansas followed a five-year pilot study conducted by ORNL, after the National Academy of Sciences endorsement of bedded salt deposits as the safest natural formations for radioactive waste disposal. Study of the suitability of salt for nuclear waste dates from 1950 when the first of several committees of the NAS considered the choices for long-term disposal or management.

Co-authors of the paper presented by Culler were John O. Blomeke, ORNL; and Walter G. Belter, AEC.

Pakistani Relief Marchers 'Trick-or-Treat' October 30

Halloween trick - or - treaters in Oak Ridge will be out October 30 for UNICEF again this year. The children will collect from 6 to 8 p.m. on Halloween. All proceeds over the $2,800 collected last year will go to special relief work in East Pakistani. A special effort will be made to collect extra money this year for this needed work. Children will have the orange UNICEF boxes and will have proper identification.

FOLK DANCING

Oak Ridge Folk Dancers began a new season recently, dancing each Tuesday from 8 to 10 p.m. at the Elm Grove Gymnasium.

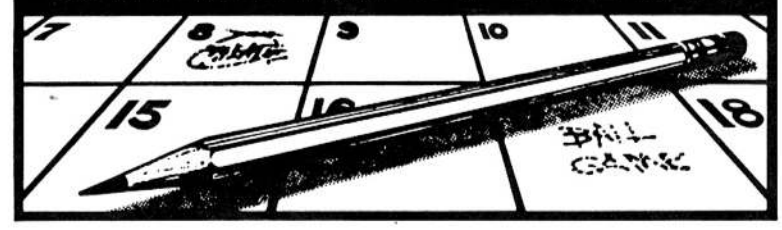
Price Cut

(Continued from Page 2)

pand about 50-fold over the next 30 years, and there will be considerable economic incentive for companies furnishing fuel cycle services to utilities to build larger fabrication and reprocessing plants. The cost reductions thus achieved by these larger plants will be reflected in lower nuclear fuel cycle costs.

Co-authors of the paper were J. Tom Roberts, A. L. "Pete" Lotts, and Troy N. Washburn, all of ORNL; and William H. McVey, of the AEC.

CALENDAR OF EVENTS



TECHNICAL

October 15

Mathematics Division Seminar: "Approximate Solutions Integral and Operator Equations," P. M. Anselone, Oregon State University. East Auditorium, Building 4500N, 10 a.m.

Biology Division Seminar: "Melanogenesis in Coat Color Mutants of the Mouse: An Electron Microscope Study," Vincent J. Hearing, National Cancer Institute. First Floor Tower Annex Conference Room, Building 9207, 3 p.m.

Biology Division Seminar: F. K. Sibberman, Brooklyn College. First Floor Tower Annex Conference Room, Building 9207, 12:15 p.m.

October 19

Society for Experimental Stress Analysis meeting. Speaker, Dr. David Goodpasture, University of Tennessee. UT Faculty Club, Neyland Drive at Kingston Pike. Social hour 6:30, dinner 7 p.m. Everyone invited. Reservations must be turned in by Friday, October 15.

ORAU Medical Division Staff Seminar: "Radiation and Chemical Safety," James D. Berger, Health Physicist, ORAU. Medical Division Conference Room, East Vance Road, 4 p.m.

Analytical Chemistry Division Seminar: "Mini-Computers in Analytical Chemistry," M. T. Kelley and R. W. Stelzner. East Auditorium, Building 4500N, 3 p.m.

October 20

Metals and Ceramics Division Seminar: "Physical Property Measurements," Dave McElroy. East Auditorium, Building 4500N, 2:30 p.m.

October 21

Biology Division Seminar: (Title to be announced), Larry Simpson, University of California, Los Angeles. Large Conference Room, Building 9207, 3 p.m.

October 20-22

Magnetic Resonance Conference: Alexander Motor Inn, Oak Ridge.

October 22

Mathematics Division Seminar: "A new Method for the Hybrid Solution of Partial Differential Equations," Paul Nelson. East Auditorium, Building 4500N, 10 a.m.

October 25-27

Health Physics Division Information Meeting: ORNL.

October 25-28

International Conference on Multiple - Charged Heavy Ion Sources and Accelerating Systems: Riverside Motor Lodge, Gatlinburg.

October 26

ORAU Medical Division Staff Seminar: "Some Applications of Physics in Medicine," Dr. Fearghus T. O'Foghludha, Duke University. Medical Division Conference Room, East Vance Road, 4 p.m.

October 27-29

National Conference on Waste Heat Utilization: River Terrace Motel, Gatlinburg.

October 28-29

Metals and Ceramics Division Information Meeting: ORNL.

October 28

Biology Division Seminar: "Translational Control of Protein Syntheses in Plants," Leon Dure, University of Georgia. Large Conference Room, Building 9207, 3 p.m.

November 1-3

Biology Division Information Meeting: ORNL.

November 3

Metals and Ceramics Division Seminar: "Prestressed Concrete in Nuclear Pressure Vessels," Grady Whitman. East Auditorium, Building 4500N, 2:30 p.m.

COMMUNITY

October 14, 21, 28

Oak Ridge Playhouse Workshop. Everyone welcome, 7:30 to 10:30 p.m.

October 16

Smallmouth Bass Tournament: All Carbide employees at Y - 12 are invited, as well as their families. Admission free, but employees must register at the dock. Sequoyah Boat Dock, 7 a.m. to 6 p.m. Sponsored by E, F, G, H, and J shifts.

October 17

Art Center Film Club presents a French movie, "Stolen Kisses." Jefferson Jr. High Little Theatre, 8 p.m. Admission: $1.50; students $1.

October 23

Oak Ridge Civic Music Association presents Robert Guralnick, pianist, performing with the Oak Ridge Symphony Orchestra. All Russian program. Oak Ridge High School Auditorium, 8:15 p.m. Admission: $4; students $2.

October 24-31

Carbide Camera Club Annual Salon: Oak Ridge Community Art Center. Weekdays 10-2 p.m.; Saturdays 10:30-12:30 p.m.; Sundays 3-6 p.m.; week nights 7-9.

November 4

The Oak Ridge Philatelist General Meeting: Fall stamp auction, Room A, Civic Center, 7 p.m. Visitors welcome.

Adamson, Weir To Chair M & C Information Meet

The Metals and Ceramics Division Information Meeting will be held October 28 and 29 in the Central Auditorium, ORNL. General chairman for the meeting is George M. Adamson, Jr., with James R. Weir as the technical chairman.

Chairman of the various technical sessions will be Jack E. Cunningham, Adamson, William O. Harms and Peter Patriarca.

Road Destructive Testing Subject for SESA Meeting

The East Tennessee Section of the Society for Experimental Stress Analysis will meet Tuesday, October 19. A dinner meeting at the UT Faculty Club, Neyland Dr. at Kingston Pike, will feature David Goodpasture from the University's Civil Engineering Department. He will speak on his work for the Tennessee Highway Department, which includes the destructive testing of actual highway bridges.

Reservations must be in by October 15, and may be made through Jim Smith, extension 3-5381.